

REMARKS

The foregoing amendment is to impart greater clarity and definiteness to the claims rather than to avoid prior art.

Applicants respectfully request reconsideration of this application as amended. Claims 1-51 are pending in the application. Claims 1-38 and 42-51 are rejected. Claims 39-41 are allowed. Claims 1, 6, 9, 11, 17, 31, 37, 42, 44 and 48 are amended.

Rejections under 35 U.S.C. 102

Claims 11-14, 44-46 and 50 are rejected under 35 U.S.C. 102(e), as allegedly being anticipated by Figure 5 of US Patent 6,816,961 (Rice). Applicant respectfully disagrees.

Claim 11 as amended, sets forth:

11. (Currently Amended) A method for rearranging data comprising:
 - loading a first data for a first plane and a second data separate from and not interleaved with the first data for a second plane separate from and not interleaved with the first plane;
 - loading a first control mask having a first shuffle pattern and a second control mask, separate from and not interleaved with the first control mask, having a second shuffle pattern;
 - selecting one of said control masks to operate on said first plane data and another of said control masks to operate on said second plane data, wherein said one control mask is different from said another control mask;
 - shuffling a first portion of said first plane data in accordance with said one control mask to generate a first set of shuffle data and a second portion of said second plane data in accordance with said another control mask to generate a second set of shuffled data separate from and not interleaved with the first set of shuffle data; and
 - merging said first set of shuffled data together with said second set of shuffled data to form a packed data resultant having data from both said first plane and said second plane.

Figure 5 of Rice and the corresponding disclosure in col. 6, line 62, through col. 7, line 32, does not disclose or suggest selecting one control mask to operate on a first

plane data and another to operate on a second plane data (but instead uses one mask, register 508, and one data of packed pixels, register 504) and shuffling a portion of each respective plane data in accordance with the control masks to generate respective sets of shuffle data, as is set forth by Claim 11 of the present application.

Applicant respectfully submits that that in order for a rejection based on anticipation to be made, the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Accordingly, Applicant respectfully submits that the claims as amended in the present application are not anticipated by Figure 5 of Rice as indicated by the Office Action.

Rejections under 35 U.S.C. §101

Claims 1-38 and 44-51 are rejected under 35 U.S.C. §101, as allegedly being directed to non-statutory subject matter. Applicant respectfully disagrees.

The Final Office Action states that since the claimed shuffling can be implemented via instructions it reads on a program per se. If that were true, then any process that could be automated through programmed machines would be non-statutory as programs per se. But it may very well be the case that any process which can be listed as steps in a claim can in fact be automated by programmed machines. Therefore, it must be the Examiner's assertion that any process which can be listed as steps in a claim is not patentable.

To this point, the Federal Circuit explained in *AT & T Corp. v. Excel Communications, Inc.* 172 F.3d 1352, 1356, 50 USPQ2D 1447, 1450 (Fed. Cir. 1999) that (emphasis added):

This court recently pointed out that any step-by-step process, be it electronic, chemical, or mechanical, involves an "algorithm" in the broad sense of the term. *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374-75, 47 USPQ2d 1596, 1602 (Fed. Cir. 1998).

Yet 35 U.S.C. §101 sets forth that (emphasis added), "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

Thus, contrary to the Examiner's assertion, the intent of such broad coverage for "any new and useful process" does not prohibit some particular new and useful processes simply because they can be performed by, or make use of a computer program.

To the later assertion, The Federal Circuit has pointed out that (emphasis provided by the Fed. Cir.):

A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, [mathematical equation, mathematical algorithm,] computer program or digital computer. *In re Alappat*, 33 F.3d 1526 at 1543, 31 USPQ2d 1545 at 1556 (Fed. Cir. 1994) (quoting *Diehr*, 450 U.S. at 192, 209 USPQ at 10).

Therefore, the Examiner is in error for incorrectly concluding that the processes of Claims 1 and 11, the executable programs on tangible machine readable media of Claims 28 and 44, and the programmed apparatus of Claim 34 are each directed to programs per se (i.e. programs—of, in or by themselves, their functionally descriptive material standing alone without reference to additional means which would allow said functionality to be realized). Indeed, the MPEP §2106.01 further states that (emphasis added):

Computer programs are often recited as part of a claim. USPTO personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Only when the claimed invention taken as a whole is directed to a mere program listing, i.e., to only its description or expression, is it descriptive material *per se* and hence nonstatutory.

Since the instant claims are not directed to a mere program listing but to otherwise statutory processes, articles and apparatus, the question at hand, is whether such processes are “new and useful.” Claim 28, for example, sets forth:

28. (Currently Amended) An article comprising a tangible machine readable medium that stores a program, said program being executable by a machine to perform a method comprising:

shuffling first set of packed data from a first source based on a first set of masks to produce a first set of shuffled data, said first set of masks to include a first plurality of control entries, wherein at least one of said first plurality of control entries is to set a first data element position in said first set of shuffled data to zero;

shuffling second packed data from a second source based on a second set of masks to produce a second set of shuffled data, said second set of masks include a second plurality of control entries, wherein at least one of said second plurality of control entries is to set a second data element position in said second set of shuffled data to zero, said second data element position different from said first data element position; and

merging said first set of shuffled data and said second set of shuffled data together to form a packed data resultant.

An analysis of the instant claims must be performed in order to make a determination of whether the subject matter is statutory. Such analysis should correlate each claim element with corresponding structures, materials or acts set forth in the specification.

The Federal Circuit makes it clear that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention. “The person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips v. AWH Corp.*, 415 F.3d at 1313.

Applicant respectfully submits that the claimed shuffling of sets of packed data from a first source based on a first set of masks and from a second source based on a second set of masks to produce, respectively, a first and a second set of shuffled data, and the masks to include control entries to set data element positions in the first and second sets of shuffled data to zero, as set forth in Claim 28 (and also in Claims 1 and 34), would not be treated merely as a program per se by a person of skill in the art in the context of the entire patent.

Claim 44, for example, further sets forth:

44. (Currently Amended) An article comprising a tangible machine readable medium that stores a program, said program being executable by a machine to perform a method comprising:
 - loading first data for a first plane and second data for a second plane;
 - loading a first control mask having a first shuffle pattern and a second control mask having a second shuffle pattern;
 - selecting one of said control masks to operate on said first plane data and another of said control masks to operate on said second plane data, wherein said one control mask is different from said another control mask;
 - shuffling a first portion of said first plane data in accordance with said one control mask to generate a first set of shuffle data and a second portion of said second plane data in accordance with said another control mask to generate a second set of shuffled data; and

merging said first set of shuffled data together with said second set of shuffled data to form a packed data resultant having data from both said first plane and said second plane..

Applicant respectfully submits that the claimed selecting one control mask to operate on a first plane data and another to operate on a second plane data and shuffling a portion of each respective plane data in accordance with the control masks to generate respective sets of shuffle data, as set forth in Claim 44 (and also in Claims 11), would not be treated merely as a program per se by a person of skill in the art in the context of the entire patent.

The instant language when correlated with the corresponding structures and processes set forth in the specification makes it apparent to one of skill in the art that the claimed invention has practical applications in the technical arts, i.e. to order data from small lookup tables in video and encryption applications, or to interleave planar color data from separate color planes, e.g. red (R) plane, green (G) plane, and blue (B) plane data for display in an RGB format.

In addition, Applicant respectfully submits, that the present application clearly asserts such a practical application in the technical arts.

For example, paragraphs 39 of the specification (emphasis added) asserts that:

Embodiments of the present invention provide a way to implement a packed byte shuffle instruction with a flush to zero capability as an algorithm that makes use of SIMD related hardware. For one embodiment, the algorithm is based on the concept of shuffling data from a particular register or memory location based on the values of a control mask for each data element position. Embodiments of a packed byte shuffle can be used to reduce the number of instructions required in many different applications that rearrange data. A packed byte shuffle instruction can also be used for any application with unaligned loads. Embodiments of this shuffle instruction can be used for filtering to arrange data for efficient multiply-accumulate operations. Similarly, a packed shuffle instruction can be used in video and encryption applications for ordering data and small lookup tables. This instruction can be used to mix data from two or more registers. Thus embodiments of a packed shuffle with a flush to zero capability algorithm in accordance with the present invention can be implemented in a processor to support SIMD operations efficiently without seriously compromising overall performance.

Paragraphs 132 of the specification (emphasis added) asserts that:

FIGS. 15A-K illustrates an algorithm, for shuffling data between multiple registers to generate interleaved data. This is an example of an application that interleaves planar color data. Image data is often processed in separate color planes and then these planes are later interleaved for display. The algorithm described below demonstrates interleaving for red plane, green plane, and blue plane data as used by image formats such as bitmaps. Numerous color spaces and interleave patterns are possible. As such, this approach can easily be extended to other color spaces and formats. This example implements an often used image processing data format process wherein red (R) plane, green (G) plane, and blue (B) plane data are interleaved into an RGB format. This example demonstrates how the flush to zero capability in accordance to the present invention significantly reduces memory accesses.

Thus the specification makes it readily apparent to one of skill in the art that the claimed invention has a practical application in the technical arts.

The Supreme Court held that the focus in any statutory subject matter analysis be on the claim as a whole, stating “When a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing, then the claim satisfies the requirements of § 101.” *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994) (quoting *Diehr*, 450 U.S. at 192, 209 USPQ at 10).

This notion is sometimes phrased in terms of requiring a transformation or reduction of 'subject matter.' In *Schrader*, the phrase 'subject matter' was determined not to be limited to tangible articles or objects, but includes intangible subject matter, such as data or signals, representative of or constituting physical activity or objects. *Schrader*, 22 F.3d at 295, 30 USPQ2D (BNA) at 1459.

Thus Applicant respectfully submits that Claims 1-38 and 44-51 are directed to statutory subject matter.

CONCLUSION

Applicants respectfully submit the amended specification, the amended drawings, and the present claims for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Lawrence Mennemeier at (408) 765-2194.

Authorization is hereby given to charge our Deposit Account No. No. 50-0221 for any charges that may be due.

Respectfully submitted,

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/Lawrence M. Mennemeier/

Lawrence M. Mennemeier

Reg. No. 51,003

INTEL CORPORATION
c/o INTELLEVATE LLP
P.O. Box 52050
Minneapolis, MN 55402
(408) 765-2194